Docket No. 200205326-1
**METHOD AND SYSTEM FOR DETERMING
CONSTRAINTS FOR A PRINTED
CIRCUIT BOARD DESIGN**
John Malvern Swope
1/7

START

GENERATE A LIST OF
LOW LEVEL DETAILS — 102

COMPILE INFORMATION
USED TO DERIVE THE
LOW LEVEL DETAILS — 104

DETERMINE THE
HIGHEST LEVEL OF
ABSTRACTED
CONSTRAINTS THAT
MAY BE USED WITH
THE INFORMATION TO
GENERATE THE LOW
LEVEL DETAILS — 106

GENERATE A PCB DESIGN
MODULE THAT OPERATES
USING THE HIGHEST LEVEL
OF ABSTRACTED
CONSTRAINTS, WHICH THE
USER CAN RELATE TO,
AND THE INFORMATION — 108

END

Fig. 1

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**METHOD AND SYSTEM FOR DETERMING
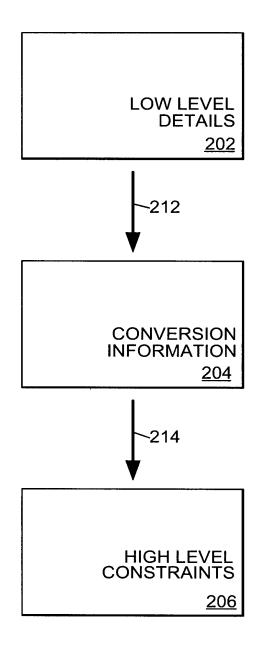CONSTRAINTS FOR A PRINTED
CIRCUIT BOARD DESIGN**
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LOW LEVEL
DETAILS
202

212

CONVERSION
INFORMATION
204

214

HIGH LEVEL
CONSTRAINTS
206

Fig. 2

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CONSTRAINTS FOR A PRINTED
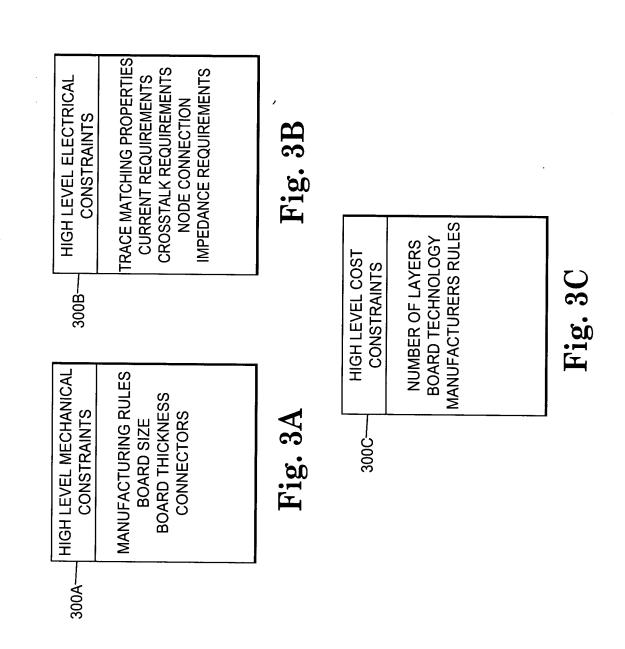CIRCUIT BOARD DESIGN**
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HIGH LEVEL ELECTRICAL CONSTRAINTS
TRACE MATCHING PROPERTIES
CURRENT REQUIREMENTS
CROSSTALK REQUIREMENTS
NODE CONNECTION
IMPEDANCE REQUIREMENTS

300B

Fig. 3B

HIGH LEVEL COST CONSTRAINTS
NUMBER OF LAYERS
BOARD TECHNOLOGY
MANUFACTURERS RULES

300C

Fig. 3C

HIGH LEVEL MECHANICAL CONSTRAINTS
MANUFACTURING RULES
BOARD SIZE
BOARD THICKNESS
CONNECTORS

300A

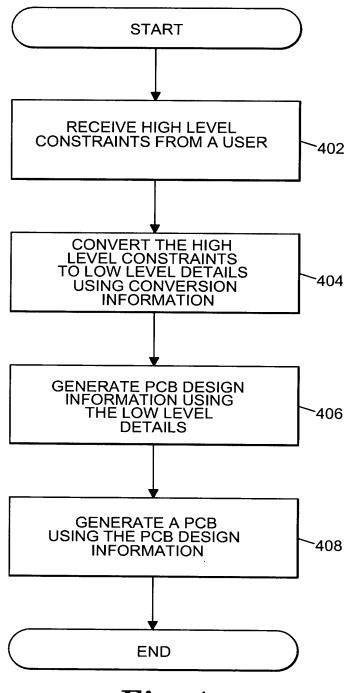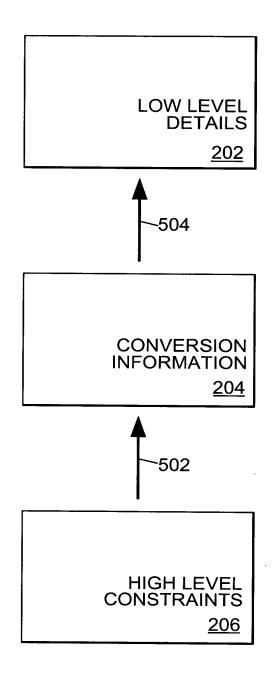**Fig. 3A**

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```
                    ┌─────────────────────┐
                    │        START        │
                    └─────────────────────┘
                               │
                               ▼
              ┌────────────────────────────────┐
              │      RECEIVE HIGH LEVEL         │
              │   CONSTRAINTS FROM A USER       │──402
              └────────────────────────────────┘
                               │
                               ▼
              ┌────────────────────────────────┐
              │     CONVERT THE HIGH            │
              │     LEVEL CONSTRAINTS           │
              │   TO LOW LEVEL DETAILS          │──404
              │    USING CONVERSION             │
              │      INFORMATION                │
              └────────────────────────────────┘
                               │
                               ▼
              ┌────────────────────────────────┐
              │    GENERATE PCB DESIGN          │
              │   INFORMATION USING             │
              │     THE LOW LEVEL               │──406
              │        DETAILS                  │
              └────────────────────────────────┘
                               │
                               ▼
              ┌────────────────────────────────┐
              │     GENERATE A PCB              │
              │  USING THE PCB DESIGN           │──408
              │     INFORMATION                 │
              └────────────────────────────────┘
                               │
                               ▼
                    ┌─────────────────────┐
                    │         END         │
                    └─────────────────────┘
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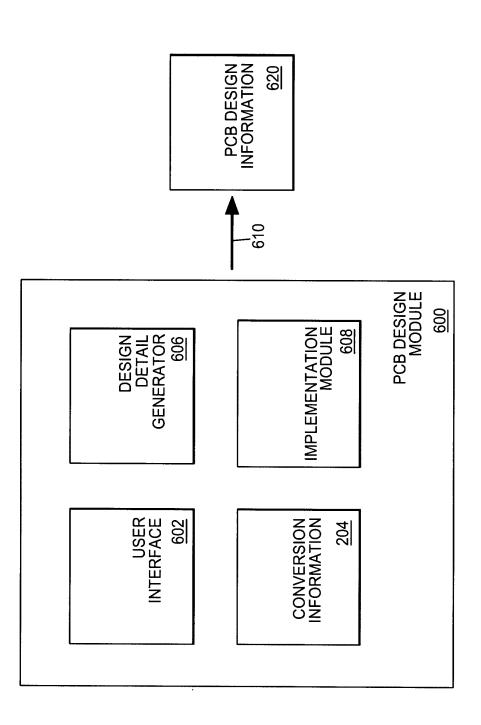
Fig. 4

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LOW LEVEL
DETAILS

<u>202</u>

504

CONVERSION
INFORMATION

<u>204</u>

502

HIGH LEVEL
CONSTRAINTS

<u>206</u>

Fig. 5

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PCB DESIGN
INFORMATION
620

610

DESIGN
DETAIL
GENERATOR
606

IMPLEMENTATION
MODULE
608

USER
INTERFACE
602

CONVERSION
INFORMATION
204

PCB DESIGN
MODULE
600

Fig. 6

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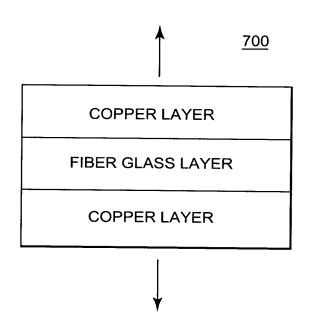<u>700</u>

| COPPER LAYER |
| FIBER GLASS LAYER |
| COPPER LAYER |

Fig. 7